IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) An optical switch, comprising:

a first optical combiner for combining at least two optical pump signals to produce a combined pump signal, and a second optical combiner for combining an input data signal with the combined pump signal to produce a combined signal;

a non-linear optical element for imparting a non-linear effect on the combined signal to generate a number of optical bands based on a simultaneous three-signal interaction of the at least two optical pump signals and the input data signal; and

at least one optical splitter for separating the combined signal from said non-linear optical element into respective generated optical bands;

wherein at least one of said at least two optical pump signals is controllably modulated such that a logic sequence of said input data signal is controllably switched.

2. (original) The optical switch of claim 1, further comprising at least two optical pump sources, each of said sources providing one of said at least two optical pump signals, wherein at least one of said at least two optical pump sources is adapted to controllably modulate its respective optical signal such that a logic sequence of said input data signal is controllably switched and an output signal of said optical switch comprises a multi-band switched optical signal.

3. (previously presented) The optical switch of claim 1, wherein said input data signal has a frequency that is substantially equal to an average of respective frequencies of said at least two optical pump sources.

4. (original) The optical switch of claim 2, further comprising a controller for controlling the modulation of the at least one modulated optical pump source.

5. (original) The optical switch of claim 2, wherein one of said at least two optical pumps is modulated and all other optical pumps are maintained constant.

6. (original) The optical switch of claim 5, wherein a resulting multi-band switched output signal is substantially a Boolean AND combination of the logic sequence of said input data signal and the logic sequence of said modulated optical pump signal.

7. (original) The optical switch of claim 5, further comprising a variable delay line for synchronizing the input data signal and the modulated optical pump.

8. (original) The optical switch of claim 1, wherein said non-linear optical element comprises a highly non-linear fiber.

9. (original) The optical switch of claim 1, wherein said non-linear optical element generates a parametric amplification of the combined signals.

10. (previously presented) The optical switch of claim 9, wherein said non-linear effect comprises difference frequency generation.

11. (original) The optical switch of claim 9, wherein an output of said optical switch comprises a replica of said input data signal and at least three idler signals.

12. (original) The optical switch of claim 11, wherein said at least three idler signals comprise at least two mirrored idler signals and at least one translated idler signal.

13. (original) The optical switch of claim 12, wherein said mirrored idler signals comprise input data signal conjugates.

14. (previously presented) The optical switch of claim 9, wherein each wavelength of said input data signal is converted into a corresponding wavelength in said respective generated optical bands.

15. (original) The optical switch of claim 2, wherein said optical pump sources comprise laser sources.

16. (previously presented) The optical switch of claim 1, wherein each of said first and second optical combiner comprises a band splitter.

17. (original) The optical switch of claim 1, wherein said at least one optical splitter comprises a band splitter.

18. (previously presented) A method of optical switching using a fiber parametric device having at least two optical pump sources, comprising:

combining a signal from each of said at least two optical pump sources in a first combiner to produce a combined pump signal, and combining the combined pump signal with an input data signal to produce a combined signal;

imparting a non-linear effect on the combined signal to generate a number of optical bands based on a simultaneous three-signal interaction of the two optical pump signals and the input data signal; and

controllably modulating at least one of said at least two optical pump sources such that a logic sequence of said input data signal is controllably switched.

19. (previously presented) The method of claim 18, further comprising separating said generated optical bands using one or more band splitters.

20. (previously presented) The method of claim 19, wherein said non-linear effect generates a parametric amplification of said combined signal such that an output of said fiber parametric device comprises one or more switched optical signals corresponding to one or more of the generated optical bands.

21. (original) The method of claim 20, wherein the output of said fiber parametric device comprises at least a replica of said input data signal and three distinct idler bands.

22-23. (canceled)

24. (previously presented) An optical switch, comprising:

a first optical combiner for combining at least two optical pump signals to produce a combined pump signal, and a second optical combiner for combining an input data signal with the combined pump signal to produce a combined signal;

a non-linear optical element for imparting a non-linear effect on the combined signal; and

at least one optical splitter for separating the combined signal from said non-linear optical element into respective generated optical bands;

wherein at least one of said at least two optical pump signals is controllably modulated such that a logic sequence of said input data signal is controllably switched; and

wherein said input data signal has a frequency that is substantially equal to an average of respective frequencies of said at least two optical pump sources.